

IN THE CLAIMS:

Claim 1 (original) Surface modified titanium dioxide fine particles comprising titanium dioxide having a surface which is modified with a hydrophilic polymer having carboxyl groups, the carboxyl groups in the hydrophilic polymer being bonded to titanium dioxide through an ester linkage.

Claim 2. (original) The surface modified titanium dioxide fine particles according to claim 1, wherein said titanium dioxide is an anatase or rutile form of titanium dioxide.

Claim 3. (previously presented) The surface modified titanium dioxide fine particles according to claim 1, wherein said titanium dioxide has a particle diameter of 2 to 200 nm.

Claim 4. (previously presented) The surface modified titanium dioxide fine particles according to claim 1, wherein said titanium dioxide is a composite titanium dioxide comprising titanium dioxide and a magnetic material.

Claim 5. (previously presented) The surface modified titanium dioxide fine particles according to claim 1, wherein said hydrophilic polymer is a water soluble polymer.

Claim 6. (original) The surface modified titanium dioxide fine particles according

to claim 5, wherein said water soluble polymer contains a polycarboxylic acid.

Claim 7. (original) The surface modified titanium dioxide fine particles according to claim 5, wherein said water soluble polymer comprises a copolymer having a plurality of carboxyl group units in its molecule.

Claim 8. (original) A dispersion liquid of surface modified titanium dioxide fine particles, comprising the surface modified titanium dioxide fine particles according to claim 1 ~~any one of claims 1 to 7~~ dispersed in an aqueous solvent.

Claim 9. (original) The dispersion liquid of surface modified titanium dioxide fine particles according to claim 8, wherein said aqueous solvent has a pH value of 3 to 13.

Claim 10. (original) The dispersion liquid of surface modified titanium dioxide fine particles according to claim 9, wherein said aqueous solvent is a pH buffer solution.

Claim 11. (original) The dispersion liquid of surface modified titanium dioxide fine particles according to claim 9, wherein said aqueous solvent is physiological saline.

Claim 12. (currently amended) The A method for treating an affected region of the body of a subject comprising (a) providing the dispersion liquid of surface

modified titanium dioxide fine particles according to ~~any one~~ Claim 9, ~~for use as~~
an auxiliary material for phototherapy ~~in which the~~ (b) introducing the auxiliary
material ~~is introduced~~ into the body in its the affected region and ~~light such as~~ (c)
applying ultraviolet light ~~is then applied~~ to the affected region to destroy the
affected region.

Claim 13. (currently amended) The method ~~dispersion liquid of surface modified~~
~~titanium dioxide fine particles~~ according to claim 12, wherein said affected region
is a cancer tissue.

Claim 14 (withdrawn/currently amended) A process for producing the surface
modified titanium dioxide fine particles according to claim 1 ~~by chemically~~
~~bonding a hydrophilic polymer to the surface of titanium dioxide fine particles,~~
said process comprising: (1) ~~the~~ a first step of dispersing a titanium dioxide sol in
a solvent to form a first dispersion liquid; (2) ~~the~~ a second step of dispersing ~~a the~~
hydrophilic polymer in a solvent to form a second dispersion liquid; (3) ~~a the~~ a third
step of mixing the ~~two~~ first and second dispersion liquids together to form a
mixed liquid; (4) ~~the~~ a fourth step of comprising heating the mixed liquid to form a
heated mixed liquid comprising the surface modified titanium dioxide fine
particles and unbonded hydrophilic polymer molecules; (5) ~~the~~ a fifth step of
separating the surface modified titanium dioxide fine particles from the unbonded
hydrophilic polymer molecules ~~remaining unbonded~~; and (6) ~~the~~ a sixth step of
purifying the separated surface modified titanium dioxide fine particles.

Claim 15. (withdrawn) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein the solvent used in the first step and the solvent used in the second step are an aprotic solvent.

Claim 16. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 15, wherein said aprotic solvent is ~~any~~ selected from the group consisting of dimethylformamide, dioxane, and dimethylsulfoxide.

Claim 17. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein ~~that~~ the heating temperature in the fourth step is from 80 to 220°C.

Claim 18. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein ~~that~~ the fifth step ~~for the separation~~ comprises ~~the step of~~ adjusting the mixed liquid to a pH of not more than 2.8 to allow only the surface modified titanium dioxide fine particles to cause isoelectric coagulation, ~~whereby~~ and removing the unbonded hydrophilic polymer molecules ~~remaining unbonded as the~~ a supernatant is ~~removed~~.

Claim 19. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein ~~that~~ the fifth step ~~for the separation~~ comprises ~~the step of~~ removing the hydrophilic

molecules remaining unbonded by molecular sieves.

Claim 20. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein ~~that the~~ sixth step ~~for the purification~~ comprises ~~the step of~~ dispersing the surface modified titanium dioxide fine particles in an aqueous solvent and then drying the fine particles.

Claim 21. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to ~~any~~ claim 14, wherein ~~that~~ the sixth step ~~for the purification~~ comprises ~~the step of~~ dispersing the surface modified titanium dioxide fine particles in an aqueous solvent and then precipitating the surface modified titanium dioxide by salting-out.

Claim 22. (withdrawn/currently amended) The process for producing surface modified titanium dioxide fine particles according to claim 14, wherein ~~that the~~ sixth step ~~for the purification~~ comprises ~~the step of~~ dispersing the surface modified titanium dioxide fine particles in an aqueous solvent and then precipitating the surface modified titanium dioxide fine particles with ~~from~~ an organic solvent.

Claim 23 (new). A composition produced by a process comprising (a) providing titanium dioxide fine particles having a size of 2 to 200nm, said titanium dioxide fine particles having a surface and an interior, (b) modifying the surface of the

titanium dioxide fine particles by mixing a dispersion liquid of the titanium dioxide particles with a solution comprising a water soluble polymer to form a mixture, (c) heating the mixture at 80 to 220°C to form surface modified titanium dioxide fine particles comprising an ester bond between the titanium dioxide particles and molecules of the water soluble polymer at the surface of the titanium dioxide fine particles, (d) removing unbonded water soluble polymer molecules and (e) recovering the surface modified titanium dioxide fine particles, said process producing the surface modified fine particles with an isoelectric point of around 2.8 to 2.9.